April 1, 2003

TO ALL BIDDERS CONCERNED:

SUBJECT : STP-9999(324)
I-80 & SR-58 Microsurfacing
Addendum No. 1

To Whom it May Concern:

We are submitting the following changes to the subject project.

1. The "Notice to Contractors" has been revised.
Bidders must re-download the Project EBS Items prior to bidding.

2. The contract time for this contract has been changed from 35 working days to 45 working days.

3. "The Bidder Schedule" has been revised.

   Roadway
   Item No. 02735000* has been changed to "Microsurfacing Mix" and the quantity has been revised to 7560 Ton.

   Item No. 027610020, Longitudinal Rumble Strip has been added.

4. The "Measurement and Payment" item number 7 has been revised and item number 9 has been added to page 3.

5. Standard drawing PV6 has been added.

6. Special Provision 00555M, "Prosecution and Progress" has been revised. See revised Note D.

7. Special Provision 02735S, "Micro-Surfacing" has been revised to correct spelling errors.

Please consider these revisions before submitting your bid.

Sincerely Yours,

Jim Anderson
Region Two Project Manager

Sincerely Yours,

Peter Negus
Deputy Construction Engineer

NOTICE TO CONTRACTORS

Sealed proposals will be received by the Utah Department of Transportation UDOT/DPS Building (4th Floor), 4501 South 2700 West, Salt Lake City, Utah. 84114-8220, until 2 o'clock p.m. Tuesday, April 15, 2003, and at that time the download process of bids from the USERTrust Vault to UDOT will begin, with the public opening of bids scheduled at 2:30 for RESURFACING of I-80 & SR-58, MICROSURFACING in TOOELE County, the same being identified as Federal Aid Project No: STP-9999(324).

Federal Regulations:
In conformity with the Federal-Aid Highway Act of 1968, the U.S. Department of Labor has certified the minimum wage rates to be paid on this contract. These rates are made a part of the contract documents. This Department has been advised by the Wage and Hour Division, U.S. Department of Labor, that contractors engaged in highway construction work are required to meet the provisions of the Fair Labor Standards Act of 1938, (52 Stat. 1060). This contract is subject to all appropriate Federal Laws, including Title VI of the Civil Rights Act of 1964.

Project Location: 10.54 Miles of Route: VAR from R.P. VAR to R.P. VAR

The principal items of work are as follows (for all items of work see attachment):
Microsurfacing Mix
Traffic Control
Longitudinal Rumble Strip

The project is to be completed: in 45 Working Days.

Other Requirements:
All project bidding information, including Specifications and Plans, can be viewed, downloaded, and printed from UDOT's Project Development Construction Bid Opening Information website, http://www.dot.utah.gov/cns/bidopeninfo.htm. To bid on UDOT projects, bidders must use UDOT's Electronic Bid System (EBS). The EBS software and EBS training schedules are also available on this website.

Project information can also be reviewed at the main office in Salt Lake City, its Region offices, and its District offices in Price, Richfield, and Cedar City.

Project Plans cannot be downloaded or printed from the website unless your company is registered with UDOT. Go to UDOT's website to register. Unregistered companies may obtain the Specifications and Plans from the main office, 4501 South 2700 West, Salt Lake City, (801) 965-4346, for a fee of $50.00, plus tax and mail charge, if applicable, none of which will be refunded.

Prequalification of bidders is required. Prior to submitting a bid, the bidder must have on file with the Utah Department of Transportation a completed and approved contractor's application for prequalification. Department processing time is 10 working days from receipt of properly executed documentation.

As required, a contractor's license must be obtained from the Utah Department of Commerce.

Each bidder must submit a bid bond from an approved surety company on forms provided by the Department; or in lieu thereof, cash, certified check, or cashier's check for not less than 5% of the total amount of the bid, made payable to the Utah Department of Transportation, showing evidence of good faith and a guarantee that if awarded the contract, the bidder will execute the contract and furnish the contract bonds as required.

The right to reject any or all bids is reserved.

If you need an accommodation under the Americans with Disabilities Act, contact the Construction Division at (801) 965-4346. Please allow three working days.

Additional information may be secured at the office of the Utah Department of Transportation, (801) 965-4346.

Dated this 22nd day of March, 2003.

UTAH DEPARTMENT OF TRANSPORTATION
John R. Njord, Director

Revised Date:

Utah Department of Transportation
Bidder's Schedule

Bid Opening Date: 4/15/2003
Project Number: STP-9999(324)
Project Name: I-80 & SR-58, MICROSURFACING
Description: RESURFACING
Funding FEDERAL

Region: REGION 2
County TOOELE

#	Item	Description	Quantity	Unit
10 - ROADWAY				
1	012850010	Mobilization	1	lump sum
2	013150010	Public Information Services	1	lump sum
3	015540005	Traffic Control	1	lump sum
4	01557000*	Maintenance of Traffic (MOT)	1	lump sum
5	015580005	Temporary Pavement Markings	313600	foot
6	022210075	Remove Guardrail	800	foot
7	02735000*	Microsurfacing Mix	7560	ton
8	027610020	Longitudinal Rumble Strip	171072	foot
9	027650020	Pavement Message Paint	92	each
10	027650060	Pavement Marking Paint	313600	foot
11	028410010	Beam Guardrail	1600	foot
12	028430035	Crash Cushion Type G	4	each

Note: Item numbers ending with "" or "P" identify a change to the Standard Specification, Supplemental Specifications or Me
and payment. Read all related documents carefully.

4	**01557000***	**Maintenance of Traffic (MOT)**	**Lump Sum**

A. Partial Payments - Based on the percentage of the project completed, excluding the cost of MOT.
   1. Failure to comply with any of the requirements of this special provision will result in non-compliance.

B. Price Adjustments:
   1. The Department reduces payment if the MOT implemented is not in compliance with the approved MOT plan, as determined by the Engineer.
   2. The amount per day by which the Contractor's compensation will be reduced is calculated using the daily charge in the Schedule of Liquidated Damages in Table 1 of Section 00555 or the Contract lump sum bid price for MOT divided by the number of Contract days, whichever is greater.

C. Payment for change in scope: Negotiate a price adjustment for MOT if the Engineer orders a change in the scope of work which requires modification to the approved MOT

5	**015580005**	**Temporary Pavement Markings**	**Feet**

Including end section and anchors.

6	**022210075**	**Remove Guardrail**	**Feet**

Including end section and anchors.

7	**02735000***	**Microsurfacing Mix**	**Ton**

Include all materials, labor, raised pavement markers and workmanship to complete the microsurfacing. The microsurfacing will be applied full width on I-80, all ramps and SR-58. The section on mainline I-80 will have a scratch coat applied to fill in the ruts and cracks as directed by the Engineer, then a second coat applied full width. Certified weight tickets will be required for the aggregate at delivery to the lay down machine. Payment for the aggregate includes all additives for the microsurfacing mix.

8	**027610020**	**Longitudinal Rumble Strip**	**Feet**

Measured along the edge of the shoulder.

U	NUMBER	TITLE	CURRENT DATE
	PV 4	Concrete Pavement Details for Urban and Interstate	07/03/02
	PV 5	Urban Concrete Pavement Details	07/03/02
U	PV 6	Rumble Strips	07/03/02
	PV 7	Rumble Strips - Typical Application	07/03/02
		Signals (SL)	
	SL 1	Traffic Signals Mast Arm Pole and Luminaire Extension	07/03/02
	SL 2	Traffic Signals Mast Arm Detail 25' Thru 65'	07/03/02
	SL 3	Underground Service Pedestal Details	07/03/02
	SL 4	Traffic Signals Mast Arm Pole Foundation	07/03/02
	SL 5	Breakaway Post Mounted Traffic Signal Pole	07/03/02
	SL 6	Power Source Details	07/03/02
	SL 7	Span Wire Signal Pole Detail	07/03/02
	SL 8	Signal Head Details	07/03/02
	SL 9	Pedestrian Signal Assembly	07/03/02
	SL 10	Controller Base Details	07/03/02
	SL 11	Traffic Signals Loop Detector Detail	07/03/02
	SL 12	Junction Box Details	07/03/02
	SL 13	Traffic Counting Loop Detector Detail	12/19/02
	SL 14	Light Pole Breakaway Base	07/03/02
	SL 15	Luminaire Breakaway Base Detail	07/03/02
	SL 16	Single Transformer Substation Details	07/03/02
	SL 17	Light Pole Anchor Base	07/03/02
	SL 18	Light Pole Foundation Extension	07/03/02
		Signs (SN)	
	SN 1	Bridge Load Limit Signs	07/03/02
	SN 2	Flashing School Sign	12/19/02
	SN 3	Overhead School Flasher	07/03/02
	SN 4	Flashing Stop Sign	12/19/02
	SN 5	Typical Installation for Milepost Signs	12/19/02

Summary Report

Project: STP-9899(324) **Version: 1**

I-80 & SR-58, MICROSURFACING

Detail	Alt Group	Alt #	Description
10 - ROADWAY	0	0	

Item Number	Description	Qty	Unit
012850010	Mobilization	1	Lump
013150010	Public Information Services	1	Lump
015540005	Traffic Control	1	Lump
01557000*	Maintenance of Traffic (MOT)	1	Lump
015580005	Temporary Pavement Markings	313,600	ft
022210075	Remove Guardrail	800	ft
02735000*	Microsurfacing Mix	7,560	Ton
027610020	Longitudinal Rumble Strip	171,072	ft
027650020	Pavement Message Paint	92	Each
027650060	Pavement Marking Paint	313,600	ft
028410010	Beam Guardrail	1,600	ft
028430035	Crash Cushion Type G	4	Each

10 - ROADWAY Alt Group: 0 Alt #: 0

Item Number	Description	Use Qty	Unit
02735000*	Microsurfacing Mix	7,560	Ton

Line/Sheet	From Station	From Offset	To Station	To Offset	Qty	Comment
					92.7	C ramp WB off ramp at Bonneville Int
					84.13	B ramp EB off ramp at Bonneville Int
					97.4	D ramp WB on ramp at Bonneville Int
					106.04	Bonneville Int overpass
					79.9	A ramp EB off ramp at Bonneville Int
I-80					316.8	WB Mainline rut and crack filling
I-80					2,577.65	Eastbound
I-80					2,580.32	Westbound
I-80					316.8	EB Mainline rut and crack filling
POE					12.84	C ramp Westbound
POE					12.16	A ramp Eastbound off
POE					31.66	B ramp Eastbound on
POE					31.08	D ramp Westbound on
POE					135.08	Parking area Eastbound
POE					120.25	Parking area Westbound
SR-58					265.03	C ramp WB off
SR-58					491.91	Mainline
SR-58					63.62	A ramp EB off
SR-58					123.63	B ramp EB on
					7,558.1	

Note #	Note
1	I-80 Mainline, ramps estimated weight of 24 lb/ sq yd SR-58 estimated weight of 24 lb/ sq yd
2	Rut and crack filling estimate weight of 10 lb/ sq yd

02761*020	Longitudinal Rumble Strip	171,072	ft

Note #	Note
1	Rumble strips will be on the inside and outside shoulders both directions of I-80 mainline.

SPECIAL PROVISION
STP-9999(324)
SECTION 00555M

PROSECUTION AND PROGRESS

PART 1 GENERAL

Add the following to paragraph 1.3 Notice to Proceed:

5. UDOT reserves the right to cancel this contract based on budgeting conditions and available funds at the time of construction.

Add the following to Paragraph 1.12 Limitation of Operations:

D. I-80 R.P. 0.0 to R.P. 9.00 (Nevada Line to MP 9) and the Port of Entry
Lane closures and work are restricted to Monday thru Friday. During working hours one lane must remain open to traffic. During non-working times all lanes must be open to traffic. No work will take place from noon on Friday thru Sunday. The Contractor shall coordinate his work activities with the Port of Entry, contact Richard Ollerton at 965-4880 and Betty Carter at 435-665-2274.

SR-58 R.P. 0.0 to R.P. 1.54 (Nevada line to MP 1.54)
Lane closures and work are restricted to Monday thru Thursday with no time restrictions. During working hours one lane must remain open to traffic in each direction. During non-working times all lanes must be open to traffic. No work will take place or lane closures from Friday thru Sunday. On the section of SR-58 that goes thru Wendover the Contractor shall maintain access to business and side streets. On SR-58 from M.P. 0.6 to I-80 all work will take place for both ramps the same day and open to traffic that evening. Do the EB ramp as a first item of work. Work on this section will be coordinated with Rielly Chemical

The Contractor shall also inform the traveling public of upcoming work 1 week prior to the start of construction with Variable Message Signs as per the MOT concept. The message will be determined by the Project Engineer. During construction the signing shall be placed according to the Maintenance of traffic Concept attached to this package.

No work or lane restrictions will be allowed on Holidays or Holiday weekends and any special events.

END OF SECTION

July 22, 2002

SPECIAL PROVISION
STP-9999(324)

SECTION 02735S

MICROSURFACING

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Furnish aggregate, polymer-modified asphalt emulsion, mineral filler, additives, and water. Proportion the mix and spread on the pavement surface. **The microsurface mixture will be capable of being spread in variable thickness cross-sections (ruts, scratch courses, and surfaces).**

1.2 RELATED SECTIONS

A. Section O2745: Asphalt Material

1.3 REFERENCES

A AASHTO T 11: Materials Finer Than 75 µm (No. 200) Sieve in Mineral Aggregates by Washing

B. AASHTO T 19: Unit Weights and Voids in Aggregate

C. AASHTO T 27: Sieve Analysis of Fine and Coarse Aggregates

D. AASHTO T 49: Penetration of Bituminous Materials

E. AASHTO T 53: Softening Point of Bitumen

F. AASHTO T 89: Determining the Liquid Limit of Soils

G. AASHTO T 90: Determining the Plastic Limit and Plasticity Index of Soils

H. AASHTO T 96: Resistance to Abrasion of Small Size Coarse Aggregate by Use o f the Los Angeles Machine

I. AASHTO T 104: Soundness of Aggregate by Use of Sodium Sulfate or Magnesium Sulfate

J. AASHTO T 112: Clay Lumps and Friable Particles in Aggregate

K. AASHTO T 176: Plastic Fines in Graded Aggregates and Soils by Use of the Sand Equivalent Test

L. AASHTO T 308: Determining the Asphalt Binder Content of Hot-Mix Asphalt (HMA) by the Ignition Method

M. AASHTO M 85: Portland Cement

N. AASHTO M 208: Cationic Emulsified Asphalt

O. ASTM D 2170: Standard Test Method for Kinematic Viscosity of Asphalts (Bitumens)

P. ASTM D 3319: Standard Practice for Accelerated Polishing of Aggregates Using The British Wheel

Q. ASTM D 3665: Standard Practice for Random Sampling of Construction Materials

R. ASTM D 3666: Specification for Minimum Requirements for Agencies Testing and Inspecting Bituminous Paving Materials

S. ASTM D 4561: Practice for Quality Control Systems for Organizations Producing and Applying Bituminous Paving Materials

T. ASTM 5506: Practice for Organizations Engaged in the Certification of Personnel Testing and Inspecting Bituminous Paving Materials

U. ASTM D 5821: Determining the Percentage of Fractured Particles in Coarse Aggregate

V. ASTM E 178: Practice for Dealing with Outlying Observations

W. UDOT Materials Manual of Instruction Part 8-209: Asphalt Binder Management Plan

X. UDOT Materials Manual of Instruction Part 8-984: Sampling Methods

PART 2 PRODUCTS

2.1 ASPHALT MATERIAL

A. Polymer-Modified Asphalt Emulsion: The emulsified asphalt will be a quick-set polymer modified CSS-1H emulsion conforming to AASHTO M208. The polymer material will be milled or blended into the asphalt cement or blended into the emulsifier solution before the emulsification process.

B. A sample of the asphalt / polymer emulsion will be submitted along with the job-mix design for approval.

C. The modified emulsion residue will meet the following criteria:
   1. Residue after distillation when tested in accordance with AASHTO T59 (modified) will be at least 62% solids. (Modified distillation procedure: Emulsion residue shall be heated to 350EF $\pm$ 10EF and held for 20 minutes. The distillation shall be performed within 60 $\pm$ 5 minutes.)
   2. Softening point when tested in accordance with AASHTO T53 will be at least 135EF (57EC).
   3. Penetration at 77EF (25EC) when tested in accordance with AASHTO T49 will be between 50 and 80.
   4. Kinematic viscosity at 275EF (135EC) when tested in accordance with ASTM 2170 will be at least 650 CST.
   5, Must parallel the standard from an established infra red spectrum characterizing the asphalt/ polymer emulsion.

2.2 MINERAL AGGREGATE

A. Mineral Aggregate: The following requirements will be used to determine the suitability of the aggregate sources and will not be used for routine project control.
   1. Soundness using sodium sulfate in accordance with AASHTO T104 will not exceed 15% loss.
   2. Abrasion loss when tested in accordance with AASHTO T96 will not exceed 30%.
   3. Sand equivalent values when tested in accordance with AASHTO T176 will be at least 60.
   4. Polishing values when tested in accordance with ASTM D3319 will be at least 31. Predominantly limestone or dolomite aggregates will not be accepted.

B. Manufactured Aggregate
   1. Will be hard and durable.
   2. Manufactured from 100% crushed stone.
   3. Free of organic material, clay balls or other deleterious substances.

C. Manufacture the dry mineral aggregate to meet one of the gradations shown below when tested in accordance with AASHTO T27 and AASHTO T11. The type to be used will be designated in the proposal. Refer to Table 2 for gradation

design limits.

D. The mineral aggregate shall be passed over a scalping screen prior to transfer to the microsurfacing mixing machine to remove oversize material.

Table 2
Job-Mix Gradation Design Limits Type III

Sieve Size (mm)	Broad Band Gradation Percent Passing	Stockpile Tolerances
9.5	100	0
4.75	70-90	±5
2.36	45-70	±5
1.18	28-50	±5
.6	19-34	±5
.3	12-27	±4
.15	7-18	±3
.075	5-15	±2

E. Mineral Filler: Type I&II Portland Cement - AASHTO M85 **or Hydrated Lime**.

F. Water: Use potable water or water free from impurities or chemical constituents that will adversely effect the emulsion or paving mix reactions as determined by the laboratory job-mix design.

G. Additives: Additives may be added to the emulsion mix or any of the component materials to provide the control of the quick-set properties and increase adhesion. They must be included as part of the laboratory job-mix design.

2.3 JOB-MIX DESIGN

A. Job-Mix Design: Submit in writing to the engineer for review at least ten days before the mixing and placing of any micro-surfacing.

B. The job-mix will be prepared by an approved independent testing laboratory with experience in micro-surfacing mix design.

C. The laboratory job-mix design will show each ingredient amount designed within the following limits:
1. Residual asphalt cement content 7.5 ± 2% by dry weight of aggregate.
2. Aggregate gradation within the job-mix gradation design limits for the type specified as shown in Table 409-1.

3. Mineral filler 1.5 ± 1.5% by dry weight of aggregate.
4. Polymer modifier 2.5% minimum polymer solids based on the residual asphalt content.
5. Additives specified by percent within limits as determined by design testing to control mix set times and adhesion.

D. All component materials indicated in the job-mix design will be representative of the materials to be used on the project.

E. Ingredients proportions will be controlled by metering or measuring devices on the micro-surfacing equipment. Readings from the metering or measuring devices will be used to determine compliance with limits stated in the approved job-mix design.

F. Job-Mix Gradation, as part of the job-mix design, will be submitted to the engineer for review ten working days prior to producing and placing micro-surfacing.

G. Single value percentages for the percent passing each sieve size will not vary by more than the stockpile limits and will remain within the Job-Mix Design Gradation Limits as shown in Table 2.

H. To make changes in the job-mix gradation:
1. Submit a written request for a change in the job-mix gradation.
2. Submit a new job-mix design if any changes in gradation are outside the gradation band allowed by the stockpile tolerance in Table 2.

PART 3 EXECUTION

3.1 STOCKPILES

A. Stockpiles sufficient for two day's production will be in place and accepted by the engineer before micro-surfacing operations begin.

B. Stockpile locations within the state Right-of-Way must be approved by the engineer.

C. Avoid segregation or degradation when placing the aggregate in stockpiles or when moving it for use. Any segregated or degraded material will be reprocessed or removed from the project.

3.2 EQUIPMENT

A. The equipment needed include mixing equipment, proportioning devices, spreading equipment, and auxiliary equipment.

B. Mixing equipment includes a machine that is specifically designed and manufactured to mix and lay micro-surfacing. The material will be mixed by an automatically sequenced, self-propelled micro-surfacing mixing machine, which will be a continuous flow mixing unit, able to accurately deliver and proportion the aggregate, emulsified asphalt, mineral filler, control setting additive, and water to a revolving multi-blade double shafted mixer and discharge the mixed product on a continuous flow basis. The machine will have sufficient storage capacity for aggregate, emulsified asphalt, mineral filler, control additive, and water to maintain an adequate supply to the proportioning controls. The machine will be capable of self-loading materials while continuing to lay micro-surfacing. The machine will be equipped to allow the operator to have full control of the forward and reverse speed during applications of the micro-surfacing material. The self-loading device, opposite side driver stations, and forward and reverse speed controls will be original equipment manufacturer design.
Proportioning devices shall have individual volume or weight controls for proportioning each material to be added to the mix (i.e. aggregate, mineral filler, emulsified asphalt, additive, and water) will be provided and properly marked.

C. The spreading equipment will spread the mixture uniformly by means of a conventional augured surfacing spreader box attached to the mixer and equipped with paddles to agitate and spread the material evenly throughout the spreader box. A front seal will be provided to insure no loss of the mixture at the road contact point. The rear seal will be adjustable and act as final strike-off. The spreader box and rear strike-off will be designed and operated to produce a free flow of uniformly consistent materials to the rear strike-off. The spreader box will have suitable means provided to side shift the box to compensate for variations in the pavement geometry. The rut filling **spreader** box will be specifically designed to fill ruts **with an average depth greater than 1", (25mm)**.

D. Auxiliary equipment refers to surface preparation equipment, traffic control equipment, hand tools, and any other support equipment necessary to accomplish the work. These will be provided by the contractor.

E. Each mixing unit to be used in performance of the work will be calibrated in the presence of the engineer prior to construction. Previous calibration documentation covering the exact materials to be used may be acceptable, provided they were made during the calendar year. The documentation will include an individual calibration for each material at various settings, which can be related to the machines metering devices. No machine will be allowed to work on the project until the calibration has been completed and accepted.

F. Provide acceptable methods of traffic control to protect the micro-surfacing from all types of vehicular traffic damage. Opening to traffic does not constitute acceptance of the work.

3.3 Surface Preparation

A To prepare the surface, clear the surface of all loose material, silt spots, vegetation, and other objectionable matter immediately before applying micro-surfacing. Any standard cleaning method can be used provided the results are acceptable. If water is used, cracks will be allowed to dry thoroughly before micro-surfacing. Manholes, valve boxes, drop inlets and other service entrances will be protected from the micro-surfacing. Surface preparation will be subject to approval by the engineer before surfacing.

B. The contractor is responsible to follow these guidelines when applying the micro-surfacing.

C. Pre-wetting of the surface is allowed when required by local conditions. Pre-wet the surface with water by fogging ahead of the spreader box. Adjust the rate of application of the water fog spray during the day to suit temperatures, surface texture, humidity, and dryness of the pavement.

3.4 Test Strip

A. A test strip of at least **500 feet (**150m**)** length will be applied to the roadway before initial placement commences. The test strip must achieve initial set within 30 minutes and show no visual signs of distress when exposed to traffic action after curing for 2 hours. If the above conditions are present and all other requirements are met, the test strip will become part of the completed item. If the test strip fails to meet the conditions stated above, the contractor will remove and replace the micro-surfacing at no expense to the department. The contractor then must gain reapproval of the micro-surfacing by the engineer and repeat the test strip process. The engineer may require a new job-mix design if failures indicate an ingredient problem.

3.5 Placement

A. The micro-surfacing will be uniform in consistency upon leaving the mixer. No lumping, balling, or unmixed aggregate will be permitted to remain in place. A sufficient amount of material will be carried in all parts of the spreader at all times so that a complete coverage is obtained. Overloading of the spreader will be avoided.

B. The thickness of the micro-surfacing application will not exceed twice the thickness of the largest aggregate size for the type being used. Exception to this would apply when a full cover course is planned over one or two lift applications as in the case of deeper rut areas. The micro-surfacing will be placed in two lifts unless otherwise specified.

C. Application rates will be as designated in the proposal. Average single lift application rates will be within limits as follows:

1. Type III - primary and interstate, 20 to 30 lbs. per square yard (10.9 to 16.3 kg. per square meter) with an average application of not less than 24 lbs. per square yard (13.0 kg. per square meter) unless otherwise stated in the project plans.
2. Type III - to fill wheel ruts, as required by rut depth and required crown.

D. No excess buildup, uncovered areas, or unsightly appearance will be allowed on longitudinal or transverse joints. The final surface coat will be placed by beginning on the low side of the cross-slope and progressing to the higher side. The contractor will provide suitable width spreading equipment to produce a minimum number of longitudinal joints throughout the project. When possible, longitudinal joints will be placed on lane lines. Half passes and odd width passes will be used only in minimum amounts. If half passes are used, they will not be the last pass of any paved area. A maximum of 15.4 cm will be allowed for overlap of longitudinal lane line joints.

E. The micro-surfacing will possess sufficient stability so that premature breaking of the material in the spreader box does not occur. The mixture will be homogeneous during and following mixing and spreading. It will be free of excess water or emulsion and free of segregation of the emulsion and aggregate fines from the coarser aggregate.

F. Areas which cannot be reached with the mixing machine will be surfaced using hand squeegees to provide complete and uniform coverage. If necessary, the area to be hand worked will be lightly dampened with water prior to mix placement. Care will be taken to leave no unsightly or nonuniform appearance from hand work. The same type of finish as applied by the spreader box will be required. Hand work will be completed during the machine application process.

G. Apply micro-surfacing in straight lines along curbs and shoulders. No runoff on these areas will be permitted. Lines at intersections will be kept straight to provide a good appearance. Use **roofing felt** if necessary to mask off the end of streets to provide straight lines.

H. Avoid application of micro-surfacing or remove thoroughly from manholes and gutter. Remove any debris associated with the performance of the work on a daily basis.

I. The micro-surfacing will not be applied if either the pavement or air temperature is below 50EF (10EC) and falling, but may be applied when both pavement and air temperature are above 45EF (7EC) and rising. No micro-surfacing will be applied when there is danger that the finished product will freeze before 24 hours. The mixture will not be applied when weather conditions prolong material set

time and delay opening to traffic beyond two hours.

3.6 Testing and Acceptance

A. The following steps will be taken when sampling and testing the micro-surfacing.

B. Each load of polymer modified asphalt emulsion delivered to the job-site or staging area will be accompanied with a certificate of analysis / compliance to identify it as the same emulsion composition that was used in the job-mix design.

C. Samples will be taken in accordance with AASHTO T40 from each load of polymer modified emulsion and tested according to the letter of minimum requirements for the project.

D. Samples of the asphalt / polymer emulsion will be taken before placement begins and, when tested, must parallel the standard from an established spectrum characterizing the emulsion. The emulsion submitted with the job-mix design will serve as the standard to assure that the same emulsion is used throughout the project. Should large enough disparities occur the engineer can request a new job-mix design and reapproval of the micro-surfacing.

E. Acceptance of the job-site or staging area stockpiles will be based on the average of five gradation tests for every 500 Tons (450 MG) conducted in accordance with AASHTO T27 and AASHTO T11. If the average of the five tests is outside the band established by the job-mix gradation design limits and the stockpile tolerance, the contractor will remove the material from the stockpile area or blend additional material to bring it into specification compliance. Additional aggregate materials used for blending must meet aggregate tests stated above. Any blending operation must produce a thoroughly mixed stockpile with a consistent gradation. A new job-mix gradation needs to be submitted for acceptance if after blending, the stockpile does not meet the original job-mix gradation. Reworked or blended stockpiles will be retested for gradation acceptance.

F. Any increase or decrease in the amount of mineral filler added to the mix during production will be limited to 1% or less as long as any changes are still within the limits of the job-mix design.

G. The engineer may sample any material that exhibits a non-uniform appearance.

H Initial set of the micro-surfacing must take place within 30 minutes and after 2 hours curing time the surface will withstand traffic action without showing any signs of distress. Micro-surfacing operations will cease if these conditions are not met and the effected micro-surfacing will be removed and replaced at no expense to the department.

I. Flushed or excessively rich areas appearing in the micro-surfacing after two hours

from the time of placement will be removed and replaced by the contractor.

J. Any areas in the finished micro-surfacing that exhibit any measurable rutting, shoving or other evidence of premature deformation when exposed to traffic action will be removed and replaced with reapproved micro-surfacing materials and procedures.

END OF SECTION